**Environmental Economics**

**Welker**

**1.1 The Law of Supply**

*Practice Activity*

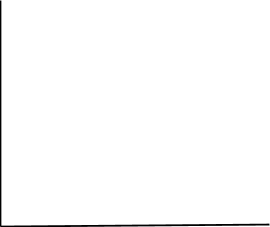
Supply is a schedule or a curve representing the direct relationship between the price of a good and the quantity firms will supply in a particular period of time. A good’s supply is determined by several factors. Obviously, price is an important factor in determining *how much* of a good firms will supply. But in order for supply itself to change, a change in one of the *non-price determinants of supply* must occur.

The table below shows the daily supply of natural gas in the United States at a range of prices.

|  |  |
| --- | --- |
| **Price of 1 cubic yard of gas ($)** | **Quantity of natural gas supplied (millions of cubic yards per year)** |
| 0 | 0 |
| 2 | 150 |
| 4 | 300 |
| 6 | 450 |
| 8 | 600 |
| 10 | 750 |
| 12 | 900 |
| 14 | 1050 |
| 16 | 1200 |

Questions:

1. Plot the data in the supply schedule above in the graph below (add labels and values appropriate to a market diagram):



1. Describe the relationship between the price of natural and the quantity supplied:

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1. How does the *law of diminishing marginal returns* help explain the relationship?

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1. What is the *law of supply*?

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1. Fill in the blanks:

The data in the supply schedule and curve above indicates that at a price of $8, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cubic yards of natural gas will be supplied each \_\_\_\_\_\_\_\_\_\_\_\_\_. Other things constant, if the price increases to \_\_\_\_\_\_\_\_\_\_\_, the \_\_\_\_\_\_\_\_\_\_\_\_ will increase to 750 natural gas per day. Such a change would represent an increase in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. If the price decreased to $6, suppliers would be willing to produce \_\_\_\_\_\_\_\_\_\_\_\_\_ per year. Such a change would represent a decrease in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Now assume that due to the implementation of a higher minimum wage, the costs of employing workers at natural gas facilities increases. This represents a change in the *ceteris paribus* condition which underlies the original supply schedule above. Due to the higher wage costs, the supply of natural gas will decrease by 50 million cubic yards at each of the prices in the original table. Fill in the supply schedule below showing the effect of the new minimum wage on the yearly supply of natural gas.

|  |  |
| --- | --- |
| Price of natural gas ($) | Quantity of natural gas supplied |
| 0 | \_\_\_\_\_ |
| 2 | \_\_\_\_\_ |
| 4 | \_\_\_\_\_ |
| 6 | \_\_\_\_\_ |
| 8 | \_\_\_\_\_ |
| 10 | \_\_\_\_\_ |
| 12 | \_\_\_\_\_ |
| 14 | \_\_\_\_\_ |
| 16 | \_\_\_\_\_ |

1. On the supply curve diagram you drew for #1, draw a new supply curve showing the effect of the new minimum wage. Label the new supply curve S1 and answer the questions that follow.
   1. Comparing the new supply curve with the original curve, we can say that minimum wage has caused supply to shift to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   2. Such a shift in supply indicates that at each of the possible prices shown, firms are now willing to produce a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ quantity of natural gas than before. The cause of this change was an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the costs of production.
2. Changes in costs of production are not the only factor that can cause the supply of a good to change. Assume that in an effort to reduce its dependence on foreign oil, the United States government reduces the tax rate that natural gas producers have to pay. This leads to an increase in the supply of natural gas at each of the prices in the original supply schedule by 75 natural gas. Fill in the supply schedule below showing the effect of the lower tax rate the yearly supply of natural gas.

|  |  |
| --- | --- |
| Price of natural gas ($) | Quantity of natural gas supplied |
| 0 | \_\_\_\_\_ |
| 2 | \_\_\_\_\_ |
| 4 | \_\_\_\_\_ |
| 6 | \_\_\_\_\_ |
| 8 | \_\_\_\_\_ |
| 10 | \_\_\_\_\_ |
| 12 | \_\_\_\_\_ |
| 14 | \_\_\_\_\_ |
| 16 | \_\_\_\_\_ |

1. On the supply curve diagram you drew for #1, draw a new supply curve showing the effect of the tax cut. Label the new supply curve S2 and answer the questions that follow.
   1. Comparing the new supply curve with the original curve, we can say that tax cut has caused supply to shift to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   2. Such a shift in supply indicates that at each of the possible prices shown, firms are now willing to produce a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ quantity of natural gas than before. The cause of this change was an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in taxes.
2. Changes in wage costs and tax rates are just two of the *non-price determinants of supply*. Below, brainstorm and clearly explain other possible factors that could cause supply of natural gas to *increase* and *decrease.*
   1. A change in the level of government subsidies (subsidies are payments from the government to producers of a particular good):
      1. Would cause supply of natural gas to increase:

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* + 1. Would cause supply of natural gas to decrease:

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* 1. A change in technology:
     1. Would cause supply of natural gas to increase:

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|  |

* + 1. Would cause supply of natural gas to decrease:

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| --- |
|  |

* 1. A change in the price of other goods that firms could produce with the same resources:
     1. Would cause supply of natural gas to increase:

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|  |

* + 1. Would cause supply of natural gas to decrease:

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|  |

* 1. A change in producers’ expectations of future prices:
     1. Would cause supply of natural gas to increase:

|  |
| --- |
|  |

* + 1. Would cause supply of natural gas to decrease:

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|  |

* 1. A change in producers’ expectations of future consumer incomes:
     1. Would cause supply of natural gas to increase:

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* + 1. Would cause supply of natural gas to decrease:

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* 1. A change in the costs of raw materials:
     1. Would cause supply of natural gas to increase:

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* + 1. Would cause supply of natural gas to decrease:

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* 1. A change in government regulation of the industry:
     1. Would cause supply of natural gas to increase:

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* + 1. Would cause supply of natural gas to decrease:

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